EIWAF/1733

Xerox Docket No. D/A0A96Q

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

Robert C. YU et al.

On Appeal from Group: 1733

Application No.: 09/683,329

Examiner: J. Haran

Filed: December 14, 2001

Docket No.: 118095

For: FABRICATION METHOD FOR ELECTROSTATOGRAPHIC MEMBER HAVING A VIRTUAL FLEXIBLE SEAMLESS SUBSTRATE

APPEAL BRIEF TRANSMITTAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached hereto is a copy of our Brief on Appeal in the above-identified application.

The Commissioner is hereby authorized to charge Deposit Account No. 24-0037 in the amount of Three Hundred Forty Dollars ($340.00) in payment of the Brief fee under 37 C.F.R. 1.17(f). In the event of any underpayment or overpayment, please debit or credit our Deposit Account No. 24-0037 as needed in order to effect proper filing of this Brief.

For the convenience of the Finance Division, two additional copies of this transmittal letter are attached.

Respectfully submitted,

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Date: November 22, 2004

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BRIEF ON APPEAL

Appeal from Group 1733

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REAL PARTY IN INTEREST

The real party in interest for this appeal and the present application is Xerox Corporation, by way of an Assignment recorded in the U.S. Patent and Trademark Office at Reel 012238, Frame 0615.

II. STATEMENT OF RELATED APPEALS AND INTERFERENCES

Following are identified any prior or pending appeals, interferences or judicial proceedings, known to Appellants, Appellants' representative, or the Assignee, that may be related to, or which may directly affect or be directly affected by or have a bearing upon the Board's decision in the pending appeal:

the appeal filed November 17, 2004 in U.S. Patent Application No. 09/683,326 filed December 14, 2001 (which has a similar specification and to which overlapping art has been applied, but which claims different subject matter).

III. STATUS OF CLAIMS

Claims 1-23 are on appeal.

Claims 1-23 are pending.

No claims are allowed, and no claims are objected to only for being dependent from a rejected base claim, but are otherwise indicated to be allowable.

Claims 1-23 are rejected.

No claims are withdrawn from consideration.

No claims are canceled.

IV. STATUS OF AMENDMENTS

No Amendment After Final Rejection has been filed.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention of claim 1 is directed to a seamless flexible electrostatographic imaging member belt fabrication method. The method comprises: providing a flexible substrate support sheet; placing a first pattern template on a first portion of the support sheet; producing first desired features on the first portion of the substrate support sheet, including removing material from the substrate support sheet with first emissions, the first pattern template preventing the first emissions from striking the support sheet and thus preventing removal of material from under the first pattern template; placing a second pattern template on a second portion of the support sheet, the second pattern template being complementary to the first pattern template; producing second desired features on the second portion of the substrate support sheet complementary to the first desired features, including removing material from the substrate support sheet with second emissions, the second pattern template preventing the second emissions from striking the support sheet and thus preventing removal of material from under the second pattern template; overlapping the first and second desired features; bonding the first desired pattern with the second desired pattern to produce a seamed belt having substantially no added seam thickness; and applying at least one coating over the seamed belt. Page 11, line 31-page 13, line 19; page 19, line 16-page 20, line 13; page 31, lines 1-21.

The invention of claim 10 is directed to a seamless flexible electrostatographic imaging member belt fabrication method. The method comprises: providing a flexible substrate support sheet; placing a first pattern template on a first portion of the support sheet; illuminating a first part of the substrate support sheet with a laser beam to produce first desired features on the substrate support sheet, including removing material from the substrate support sheet with first emissions, the first pattern template preventing the first emissions from striking the support sheet and thus preventing removal of material from under

the first pattern template; placing a second pattern template on a second portion of the substrate sheet, the second pattern template being complementary to the first pattern template; illuminating a second part of the substrate support sheet with a laser beam to produce second desired features on the substrate support sheet, including removing material from the substrate support sheet with second emissions, the second pattern template preventing the second emissions from striking the support sheet and thus preventing removal of material from under the second pattern template; overlapping the first and second desired features; bonding the first desired pattern with the second desired pattern to produce a seamed belt having substantially no added seam thickness; and applying at least one coating over the seamed belt. Page 11, line 31-page 13, line 19; page 19, line 16-page 20, line 13; page 32, line 11-page 33, line 2.

The invention of claim 16 is directed to a seamless flexible electrostatographic imaging member belt fabrication method. The method comprises: providing a flexible substrate support sheet; placing first and second complementary pattern templates over first and second portions of the substrate support sheet; bombarding the first portion of the substrate support sheet with first emissions to produce first desired features in a first pattern; bombarding the second portion of the substrate support sheet with second emissions to produce second desired features in a second pattern complementary to the first pattern; overlapping and mating the first and second desired features; bonding the first desired features with the second desired features to produce a seamed belt; and applying at least one coating to the belt. Page 11, line 31-page 13, line 19; page 19, line 16-page 20, line 13; page 33, line 24-page 34, line 7.

The invention of claim 21 is directed to a seamless flexible electrostatographic imaging member belt fabrication method. The method comprises: providing a flexible substrate support sheet; placing first and second pattern templates on respective first and

second portions of the substrate support sheet; producing first desired features on the first portion of the substrate support sheet, including removing material from the substrate support sheet with first emissions; producing second desired features on the second portion of the substrate support sheet complementary to the first desired features, including removing material from the substrate support sheet with second emissions; removing material from the substrate support sheet with first and second emissions including inducing a desired shape in at least one of the first and second portions by passing the at least one of the first and second emissions through at least one mask; removing material from the substrate with first emissions further including inducing relative motion between the laser beam and the substrate support sheet; overlapping the first and second desired features; bonding the first desired features with the second desired features to produce a seamed belt; and applying at least one coating over the substrate support sheet, the at least one coating including a photoconductive coating. Page 11, line 31-page 13, line 19; page 19, line 16-page 20, line 13; page 34, line 17-page 35, line 9.

All of the claims refer to a seamless flexible electrostatographic imaging member belt fabrication method. As recited in independent claims 1, 10, 16 and 21, the belt formed from the flexible substrate support sheet has a seam. However, the coating applied thereto is seamless. Thus, although the flexible substrate support does have a seam, the resulting imaging member belt is effectively seamless. Page 19, lines 5-15 (¶[0065]).

Upon reviewing the specification, one of ordinary skill in the art would understand that the word "seamless" is used in the claims, not to refer to a belt that has no seam in any layer thereof. Instead, the term "seamless" should clearly be interpreted based on the specification to read on a belt containing at least one seamless coating layer on a seamed substrate support, such that the belt, in its entirety, acts as a seamless belt. Page 19, lines 5-15.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are presented for review:

Claims 1-23 are under 35 U.S.C. §103 over U.S. Patent No. 5,549,193 to Schlueter et al. (hereinafter "Schlueter '193") in view of U.S. Patent No. 5,688,355 to Yu (hereinafter "Yu"), U.S. Patent No. 5,997,974 to Schlueter et al. (hereinafter "Schlueter '974") and U.S. Patent No. 5,942,301 to Schlueter et al. (hereinafter "Schlueter '301").

VII. ARGUMENT

Claims 1-23 are under 35 U.S.C. §103 over Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301. Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 do not teach or suggest the methods of claims 1-23.

A. Claims 1-9 Would Not Have Been Obvious Over Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301

Claim 1 is an independent claims directed to a seamless flexible electrostatographic imaging member belt fabrication method. The method comprises: providing a flexible substrate support sheet; placing a first pattern template on a first portion of the support sheet; producing first desired features on the first portion of the substrate support sheet, including removing material from the substrate support sheet with first emissions, the first pattern template preventing the first emissions from striking the support sheet and thus preventing removal of material from under the first pattern template; placing a second pattern template on a second portion of the support sheet, the second pattern template being complementary to the first pattern template; producing second desired features on the second portion of the substrate support sheet complementary to the first desired features, including removing material from the substrate support sheet with second emissions, the second pattern template preventing the second emissions from striking the support sheet and thus preventing removal of material from under the second pattern template; overlapping the first and second desired features; bonding the first desired pattern with the second desired pattern to produce a seamed belt having substantially no added seam thickness; and applying at least one coating over the seamed belt. Claims 2-9 depend from claim 1. Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 do not teach or suggest the methods of claims 1-9.

1. Schlueter '193 Does Not Teach or Suggest the Features of Claim 1

Schlueter '193 is directed to an endless flexible seamed belt formed by joining two ends of a material, the belt having at least one overlapping, butting, interlocking joint. See the Abstract. Schlueter '193 does not teach or suggest a method for forming a seamed belt in which complementary templates placed over the support sheet are used to prevent emissions from striking the support sheet, thus preventing removal of material from under the templates. In addition, as acknowledged in the Final Rejection, although Schlueter '193 describes minimizing the thickness differential between the seamed portion of the belt and the adjacent portions, as depicted in Figures 2-4 of Schlueter '193, the belts described therein clearly have significant added belt thickness at the seam. Thus, Schlueter '193 does not teach or suggest a seamed belt having substantially no added seam thickness. Furthermore, Schlueter '193 does not teach or suggest applying at least one coating over the seamed belt.

2. Yu Does Not Overcome the Deficiencies of Schlueter '193

Yu is directed to a method for making a seamed flexible belt in which a flexible sheet having all of the layers of the belt to be formed undergoes ablation. A first end region is then overlapped with a second end region and fused to form a seamed belt. Col. 8, lines 1-22. Yu does not teach or suggest a method for forming a seamed belt in which complementary templates placed over the support sheet are used to prevent emissions from striking the support sheet, thus preventing removal of material from under the templates. In addition, Yu does not teach or suggest using the method described therein to form a seamed belt having substantially no added seam thickness. In contrast, the belts depicted in Figures 6B, 7B, 8B and 9B of Yu clearly have added seam thickness. Furthermore, Schlueter '193 does not teach or suggest applying at least one coating over the seamed belt. Thus, Yu does not overcome any of the deficiencies of Schlueter '193.

3. Schlueter '974 Does Not Overcome the Deficiencies of Schlueter '193 and Yu

Schlueter '974 is directed to forming an endless flexible seamed belt with a mechanically and electrically invisible seam. Col. 4, lines 14-15. To form such a belt, Schlueter '974 teaches joining two ends of a flexible substrate, each end of the substrate having a plurality of mutually mating elements in a puzzle-cut pattern in an interlocking relationship. These mutually mating elements clearly do not overlap in forming the seamed belt. The surfaces of the mutually mating elements have a gap therebetween to which adhesive material is applied such that there is absent any substantially thickness differential between the seam and the portions of the belt adjacent the seam. An undercoat layer is then applied to the flexible substrate and the seam in order to smooth the seamed surface for the application of the charge generating layer and charge transfer layer. Col. 3, line 41 - col. 4, line 28.

Schlueter '974 does not teach or suggest a method for forming a seamed belt in which complementary templates placed over the support sheet are used to prevent emissions from striking the support sheet, thus preventing removal of material from under the templates.

In addition, although Schlueter '974 describes a seamed belt having substantially no added seam thickness, in order to achieve this goal, Schlueter '974 teaches using mutually mating elements in a puzzle-cut pattern in an interlocking relationship rather than overlapping features. In particular, Schlueter '974 specifically teaches away from overlapping, stating that overlapping techniques provide a bump or other discontinuity in the belt surface leading to a height differential between adjacent portions of the belt, which leads to performance failure in many applications. Col. 1, lines 56-65. Thus, in order to form a seamed belt having substantially no added seam thickness, Schlueter '974 teaches away from the method of claim 1, which overlaps first and second portions of the flexible substrate support sheet.

Furthermore, although Schlueter '974 teaches applying at least one coating over a seamed belt, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed Cir. 1983) *cert. denied*, 469 U.S. 851 (1984). When viewed in its entirety, Schlueter '974 clearly teaches away from the method of claim 1, stating that overlapping techniques should not be used because they provide a bump or other discontinuity in the belt surface. Col. 1, lines 56-65. Neither Schlueter '193 nor Yu teach or suggest that the overlapping techniques described therein avoid this bump or other discontinuity. Thus, one of ordinary skill in the art would not have been motivated to combine the teachings in Schlueter '193 and/or Yu of overlapping techniques with the teaching in Schlueter '974 of applying a coating over a seamed belt in order to achieve the method of claim 1. In contrast, any combination of Schlueter '974 with Schlueter '193 and/or Yu would result in a method in which the ends of the support sheet were not overlapped in forming the seamed belt.

In summary, Schlueter '974 cannot properly be combined with Schlueter '193 and/or Yu in order to teach a method in which portions of a support sheet are overlapped to produce a seamed belt having substantially no added seam thickness, followed by applying at least one coating over the seamed belt. In addition, none of Schlueter '193, Yu or Schlueter '974, individually or as combined, teach or suggest using complementary templates placed over the support sheet to prevent emissions from striking the substrate support sheet, thus preventing removal of material from under the templates. Thus, Schlueter '974 does not overcome the deficiencies of Schlueter '193 and Yu.

4. Schlueter '301 Does Not Overcome the Deficiencies of Schlueter '193, Yu and Schlueter '974

As with Schlueter '974, Schlueter '301 is directed to forming a belt by joining two ends of a flexible substrate, each end of the substrate having a plurality of mutually mating elements in a puzzle-cut pattern that interlock but are spaced apart. Col. 1, lines 39-44. Schlueter '301 does not teach or suggest overlapping portions of a support sheet to form a seamed belt having substantially no added seam thickness. In addition, Schlueter '193 does not teach or suggest applying at least one coating over the seamed belt.

Schlueter '301 teaches that the puzzle-cut pattern may be formed according to any conventional shaping technique, such as by die cutting or laser cutting with commercially available lasers. Col. 3, lines 39-42. In the Examples section, Schlueter '301 indicates that the forming/cutting can be done using a template. Col. 11, line 49. However, Schlueter '301 does not teach or suggest how the template is used. In particular, Schlueter '301 does not teach or suggest placing complementary templates over a support sheet to prevent emissions from striking the support sheet, thus preventing removal of material from under the templates, as recited in claim 1. In addition, Schlueter '301 does not teach or suggest using a template to form features that can be overlapped by the method of claim 1. In contrast, Schlueter '301 uses a template to form puzzle-cuts, which extend through the surface of the support sheet, and are therefore not overlapping features. See Figures 2-5. Therefore, Schlueter '301 does not overcome the deficiencies of Schlueter '193, Yu and Schlueter '974.

5. Summary

As properly combined, Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 do not teach or suggest the method of claim 1. In particular, the combined teachings of these references do not teach or suggest: (1) placing complementary templates over a support sheet to prevent emissions from striking the support sheet, thus preventing

removal of material from under the templates; (2) overlapping the ends of a support sheet to produce a seamed belt having substantially no added seam thickness; and/or (3) applying a coating over a seamed belt formed by overlapping the ends of a support sheet. Therefore, the rejection of claim 1, and of claims 2-9, which depend from claim 1, under 35 U.S.C. §103 over Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 should be withdrawn.

B. Claims 10-15 Would Not Have Been Obvious Over Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301

Claim 10 is an independent claim directed to a seamless flexible electrostatographic imaging member belt fabrication method. The method comprises: providing a flexible substrate support sheet; placing a first pattern template on a first portion of the support sheet; illuminating a first part of the substrate support sheet with a laser beam to produce first desired features on the substrate support sheet, including removing material from the substrate support sheet with first emissions, the first pattern template preventing the first emissions from striking the support sheet and thus preventing removal of material from under the first pattern template; placing a second pattern template on a second portion of the substrate sheet, the second pattern template being complementary to the first pattern template; illuminating a second part of the substrate support sheet with a laser beam to produce second desired features on the substrate support sheet, including removing material from the substrate support sheet with second emissions, the second pattern template preventing the second emissions from striking the support sheet and thus preventing removal of material from under the second pattern template; overlapping the first and second desired features; bonding the first desired pattern with the second desired pattern to produce a seamed belt having substantially no added seam thickness; and applying at least one coating over the seamed belt. Claims 11-15 depend from claim 10 directly or indirectly. Schlueter '193 in

view of Yu, Schlueter '974 and Schlueter '301 do not teach or suggest the methods of claims 10-15.

1. Schlueter '193 Does Not Teach or Suggest the Features of Claim 10

Schlueter '193 is directed to an endless flexible seamed belt formed by joining two ends of a material, the belt having at least one overlapping, butting, interlocking joint. See the Abstract. Schlueter '193 does not teach or suggest a method for forming a seamed belt in which complementary templates placed over the support sheet are used to prevent emissions from striking the support sheet, thus preventing removal of material from under the templates. In addition, as acknowledged in the Final Rejection, although Schlueter '193 describes minimizing the thickness differential between the seamed portion of the belt and the adjacent portions, as depicted in Figures 2-4 of Schlueter '193, the belts described therein clearly have significant added belt thickness at the seam. Thus, Schlueter '193 does not teach or suggest a seamed belt having substantially no added seam thickness. Furthermore, Schlueter '193 does not teach or suggest applying at least one coating over the seamed belt.

2. Yu Does Not Overcome the Deficiencies of Schlueter '193

Yu is directed to a method for making a seamed flexible belt in which a flexible sheet having all of the layers of the belt to be formed undergoes ablation. A first end region is then overlapped with a second end region and fused to form a seamed belt. Col. 8, lines 1-22. Yu does not teach or suggest a method for forming a seamed belt in which complementary templates placed over the support sheet are used to prevent emissions from striking the support sheet, thus preventing removal of material from under the templates. In addition, Yu does not teach or suggest using the method described therein to form a seamed belt having substantially no added seam thickness. In contrast, the belts depicted in Figures 6B, 7B, 8B and 9B of Yu clearly have added seam thickness. Furthermore, Schlueter '193 does not teach

or suggest applying at least one coating over the seamed belt. Thus, Yu does not overcome any of the deficiencies of Schlueter '193.

3. Schlueter '974 Does Not Overcome the Deficiencies of Schlueter '193 and Yu

Schlueter '974 is directed to forming an endless flexible seamed belt with a mechanically and electrically invisible seam. Col. 4, lines 14-15. To form such a belt, Schlueter '974 teaches joining two ends of a flexible substrate, each end of the substrate having a plurality of mutually mating elements in a puzzle-cut pattern in an interlocking relationship. These mutually mating elements clearly do not overlap in forming the seamed belt. The surfaces of the mutually mating elements have a gap therebetween to which adhesive material is applied such that there is absent any substantially thickness differential between the seam and the portions of the belt adjacent the seam. An undercoat layer is then applied to the flexible substrate and the seam in order to smooth the seamed surface for the application of the charge generating layer and charge transfer layer. Col. 3, line 41 - col. 4, line 28.

Schlueter '974 does not teach or suggest a method for forming a seamed belt in which complementary templates placed over the support sheet are used to prevent emissions from striking the support sheet, thus preventing removal of material from under the templates.

In addition, although Schlueter '974 describes a seamed belt having substantially no added seam thickness, in order to achieve this goal, Schlueter '974 teaches using mutually mating elements in a puzzle-cut pattern in an interlocking relationship rather than overlapping features. In particular, Schlueter '974 specifically teaches away from overlapping, stating that overlapping techniques provide a bump or other discontinuity in the belt surface leading to a height differential between adjacent portions of the belt, which leads to performance failure in many applications. Col. 1, lines 56-65. Thus, in order to form a seamed belt having

substantially no added seam thickness, Schlueter '974 teaches away from the method of claim 10, which overlaps first and second portions of the flexible substrate support sheet.

Furthermore, although Schlueter '974 teaches applying at least one coating over a seamed belt, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed Cir. 1983) *cert. denied*, 469 U.S. 851 (1984). When viewed in its entirety, Schlueter '974 clearly teaches away from the method of claim 10, stating that overlapping techniques should not be used because they provide a bump or other discontinuity in the belt surface. Col. 1, lines 56-65. Neither Schlueter '193 nor Yu teach or suggest that the overlapping techniques described therein avoid this bump or other discontinuity. Thus, one of ordinary skill in the art would not have been motivated to combine the teachings in Schlueter '193 and/or Yu of overlapping techniques with the teaching in Schlueter '974 of applying a coating over a seamed belt in order to achieve the method of claim 10. In contrast, any combination of Schlueter '974 with Schlueter '193 and/or Yu would result in a method in which the ends of the support sheet were not overlapped in forming the seamed belt.

In summary, Schlueter '974 cannot properly be combined with Schlueter '193 and/or Yu in order to teach a method in which portions of a support sheet are overlapped to produce a seamed belt having substantially no added seam thickness, followed by applying at least one coating over the seamed belt. In addition, none of Schlueter '193, Yu or Schlueter '974, individually or as combined, teach or suggest using complementary templates placed over the support sheet to prevent emissions from striking the substrate support sheet, thus preventing removal of material from under the templates. Thus, Schlueter '974 does not overcome the deficiencies of Schlueter '193 and Yu.

4. Schlueter '301 Does Not Overcome the Deficiencies of Schlueter '193, Yu and Schlueter '974

As with Schlueter '974, Schlueter '301 is directed to forming a belt by joining two ends of a flexible substrate, each end of the substrate having a plurality of mutually mating elements in a puzzle-cut pattern that interlock but are spaced apart. Col. 1, lines 39-44. Schlueter '301 does not teach or suggest overlapping portions of a support sheet to form a seamed belt having substantially no added seam thickness. In addition, Schlueter '193 does not teach or suggest applying at least one coating over the seamed belt.

Schlueter '301 teaches that the puzzle-cut pattern may be formed according to any conventional shaping technique, such as by die cutting or laser cutting with commercially available lasers. Col. 3, lines 39-42. In the Examples section, Schlueter '301 indicates that the forming/cutting can be done using a template. Col. 11, line 49. However, Schlueter '301 does not teach or suggest how the template is used. In particular, Schlueter '301 does not teach or suggest placing complementary templates over a support sheet to prevent emissions from striking the support sheet, thus preventing removal of material from under the templates, as recited in claim 10. In addition, Schlueter '301 does not teach or suggest using a template to form features that can be overlapped by the method of claim 10. In contrast, Schlueter '301 uses a template to form puzzle-cuts, which extend through the surface of the support sheet, and are therefore not overlapping features. See Figures 2-5. Therefore, Schlueter '301 does not overcome the deficiencies of Schlueter '193, Yu and Schlueter '974.

5. Summary

As properly combined, Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 do not teach or suggest the method of claim 10. In particular, the combined teachings of these references do not teach or suggest: (1) placing complementary templates over a support sheet to prevent emissions from striking the support sheet, thus preventing

removal of material from under the templates; (2) overlapping the ends of a support sheet to produce a seamed belt having substantially no added seam thickness; and/or (3) applying a coating over a seamed belt formed by overlapping the ends of a support sheet. Therefore, the rejection of claim 10, and of claims 11-15, which depend from claim 10, under 35 U.S.C. §103 over Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 should be withdrawn.

C. Claims 16-20, 22 and 23 Would Not Have Been Obvious Over Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301

Claim 16 is an independent claim directed to a seamless flexible electrostatographic imaging member belt fabrication method. The method comprises: providing a flexible substrate support sheet; placing first and second complementary pattern templates over first and second portions of the substrate support sheet; bombarding the first portion of the substrate support sheet with first emissions to produce first desired features in a first pattern; bombarding the second portion of the substrate support sheet with second emissions to produce second desired features in a second pattern complementary to the first pattern; overlapping and mating the first and second desired features; bonding the first desired features with the second desired features to produce a seamed belt; and applying at least one coating to the belt. Claims 17-20, 22 and 23 depend from claim 16 directly or indirectly. Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 do not teach or suggest the methods of claims 16-20, 22 and 23.

1. Schlueter '193 Does Not Teach or Suggest the Features of Claim 16

Schlueter '193 is directed to an endless flexible seamed belt formed by joining two ends of a material, the belt having at least one overlapping, butting, interlocking joint. See the Abstract. Schlueter '193 does not teach or suggest a method for forming a seamed belt in which complementary templates are placed over the support sheet or that, by bombarding

portions of the support sheet with emissions, complementary templates over the bombarded portions can be used to form first and second complementary patterns in a support sheet that can be overlapped to form a seamed belt. In addition, Schlueter '193 does not teach or suggest applying at least one coating over the seamed belt.

2. Yu Does Not Overcome the Deficiencies of Schlueter '193

Yu is directed to a method for making a seamed flexible belt in which a flexible sheet having all of the layers of the belt to be formed undergoes ablation. A first end region is then overlapped with a second end region and fused to form a seamed belt. Col. 8, lines 1-22. Yu does not teach or suggest a method for forming a seamed belt in which complementary templates are placed over the support sheet or that, by bombarding portions of the support sheet with emissions, complementary templates over the bombarded portions can be used to form first and second complementary patterns in a support sheet that can be overlapped to form a seamed belt. In addition, Yu does not teach or suggest applying at least one coating over the seamed belt. Thus, Yu does not overcome any of the deficiencies of Schlueter '193.

3. Schlueter '974 Does Not Overcome the Deficiencies of Schlueter '193 and Yu

Schlueter '974 is directed to forming an endless flexible seamed belt with a mechanically and electrically invisible seam. Col. 4, lines 14-15. To form such a belt, Schlueter '974 teaches joining two ends of a flexible substrate, each end of the substrate having a plurality of mutually mating elements in a puzzle-cut pattern in an interlocking relationship. These mutually mating elements clearly do not overlap in forming the seamed belt. The surfaces of the mutually mating elements have a gap therebetween to which adhesive material is applied such that there is absent any substantially thickness differential between the seam and the portions of the belt adjacent the seam. An undercoat layer is then applied to the flexible substrate and the seam in order to smooth the seamed surface for the

application of the charge generating layer and charge transfer layer. Col. 3, line 41 - col. 4, line 28.

Schlueter '974 does not teach or suggest a method for forming a seamed belt in which complementary templates are placed over the support sheet or that, by bombarding portions of the support sheet with emissions, complementary templates over the bombarded portions can be used to form first and second complementary patterns in a support sheet that can be overlapped to form a seamed belt.

In addition, although Schlueter '974 teaches applying at least one coating over a seamed belt, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed Cir. 1983) *cert. denied*, 469 U.S. 851 (1984). When viewed in its entirety, Schlueter '974 clearly teaches away from the method of claim 16, stating that overlapping techniques should not be used because they provide a bump or other discontinuity in the belt surface leading to a height differential between adjacent portions of the belt, which leads to performance failure in many applications. Col. 1, lines 56-65. Neither Schlueter '193 nor Yu teach or suggest that the overlapping techniques described therein avoid this bump or other discontinuity. Thus, one of ordinary skill in the art would not have been motivated to combine the teachings in Schlueter '193 and/or Yu of overlapping techniques with the teaching in Schlueter '974 of applying a coating over a seamed belt in order to achieve the method of claim 16. In contrast, any combination of Schlueter '974 with Schlueter '193 and/or Yu would result in a method in which the ends of the support sheet were not overlapped in forming the seamed belt.

In summary, Schlueter '974 cannot properly be combined with Schlueter '193 and/or Yu in order to teach a method in which at least one coating is applied to a seamed belt formed by overlapping portions of a support sheet. In addition, none of Schlueter '193, Yu or

Schlueter '974, individually or as combined, teach or suggest placing complementary templates over the support sheet or that, by bombarding portions of the support sheet with emissions, complementary templates over the bombarded portions can be used to form first and second complementary patterns in a support sheet that can be overlapped to form a seamed belt. Thus, Schlueter '974 does not overcome the deficiencies of Schlueter '193 and Yu.

4. Schlueter '301 Does Not Overcome the Deficiencies of Schlueter '193, Yu and Schlueter '974

As with Schlueter '974, Schlueter '301 is directed to forming a belt by joining two ends of a flexible substrate, each end of the substrate having a plurality of mutually mating elements in a puzzle-cut pattern that interlock but are spaced apart. Col. 1, lines 39-44. Schlueter '301 teaches that the puzzle-cut pattern may be formed according to any conventional shaping technique, such as by die cutting or laser cutting with commercially available lasers. Col. 3, lines 39-42. In the Examples section, Schlueter '301 indicates that the forming/cutting can be done using a template. Col. 11, line 49. However, Schlueter '301 does not teach or suggest how the template is used. In particular, Schlueter '301 does not teach or suggest placing complementary templates over a support sheet, as recited in claim 16. In addition, Schlueter '301 does not teach or suggest using a template to form features that can be overlapped by the method of claim 16. In contrast, Schlueter '301 uses a template to form puzzle-cuts, which extend through the surface of the support sheet, and are therefore not overlapping features. See Figures 2-5. Furthermore, Schlueter '301 does not teach or suggest applying at least one coating over the seamed belt. Therefore, Schlueter '301 does not overcome the deficiencies of Schlueter '193, Yu and Schlueter '974.

5. Summary

As properly combined, Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 do not teach or suggest the method of claim 16. In particular, the combined teachings of these references do not teach or suggest: (1) placing complementary templates over a support sheet to form first and second complementary patterns in a support sheet, which can be overlapped to form a seamed belt, by bombarding portions of the support sheet with emissions; and/or (2) applying a coating over a seamed belt formed by overlapping the ends of a support sheet. Therefore, the rejection of claim 16, and of claims 17-20, 22 and 23, which depend from claim 16, under 35 U.S.C. §103 over Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 should be withdrawn.

D. Claim 21 Would Not Have Been Obvious Over Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301

Claim 21 is an independent claim directed to a seamless flexible electrostatographic imaging member belt fabrication method. The method comprises: providing a flexible substrate support sheet; placing first and second pattern templates on respective first and second portions of the substrate support sheet; producing first desired features on the first portion of the substrate support sheet, including removing material from the substrate support sheet with first emissions; producing second desired features on the second portion of the substrate support sheet complementary to the first desired features, including removing material from the substrate support sheet with second emissions; removing material from the substrate support sheet with first and second emissions including inducing a desired shape in at least one of the first and second portions by passing the at least one of the first and second emissions through at least one mask; removing material from the substrate with first emissions further including inducing relative motion between the laser beam and the substrate support sheet; overlapping the first and second desired features; bonding the first desired

features with the second desired features to produce a seamed belt; and applying at least one coating over the substrate support sheet, the at least one coating including a photoconductive coating. Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 do not teach or suggest the method of claim 21.

1. Schlueter '193 Does Not Teach or Suggest the Features of Claim 21

Schlueter '193 is directed to an endless flexible seamed belt formed by joining two ends of a material, the belt having at least one overlapping, butting, interlocking joint. See the Abstract. Schlueter '193 does not teach or suggest a method for forming a seamed belt in which templates are placed over the support sheet or that templates can be used to form first and second features in a support sheet that can be overlapped to form a seamed belt. In addition, Schlueter '193 does not teach or suggest applying at least one coating over the seamed belt.

2. Yu Does Not Overcome the Deficiencies of Schlueter '193

Yu is directed to a method for making a seamed flexible belt in which a flexible sheet having all of the layers of the belt to be formed undergoes ablation. A first end region is then overlapped with a second end region and fused to form a seamed belt. Col. 8, lines 1-22. Yu does not teach or suggest a method for forming a seamed belt in which templates are placed over the support sheet or that templates can be used to form first and second features in a support sheet that can be overlapped to form a seamed belt. In addition, Yu does not teach or suggest applying at least one coating over the seamed belt. Thus, Yu does not overcome any of the deficiencies of Schlueter '193.

3. Schlueter '974 Does Not Overcome the Deficiencies of Schlueter '193 and Yu

Schlueter '974 is directed to forming an endless flexible seamed belt with a mechanically and electrically invisible seam. Col. 4, lines 14-15. To form such a belt,

Schlueter '974 teaches joining two ends of a flexible substrate, each end of the substrate having a plurality of mutually mating elements in a puzzle-cut pattern in an interlocking relationship. These mutually mating elements clearly do not overlap in forming the seamed belt. The surfaces of the mutually mating elements have a gap therebetween to which adhesive material is applied such that there is absent any substantially thickness differential between the seam and the portions of the belt adjacent the seam. An undercoat layer is then applied to the flexible substrate and the seam in order to smooth the seamed surface for the application of the charge generating layer and charge transfer layer. Col. 3, line 41 - col. 4, line 28.

Schlueter '974 does not teach or suggest a method for forming a seamed belt in which templates are placed over the support sheet or that templates can be used to form first and second features in a support sheet that can be overlapped to form a seamed belt.

In addition, although Schlueter '974 teaches applying at least one coating over a seamed belt, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed Cir. 1983) *cert. denied*, 469 U.S. 851 (1984). When viewed in its entirety, Schlueter '974 clearly teaches away from the method of claim 16, stating that overlapping techniques should not be used because they provide a bump or other discontinuity in the belt surface leading to a height differential between adjacent portions of the belt, which leads to performance failure in many applications. Col. 1, lines 56-65. Neither Schlueter '193 nor Yu teach or suggest that the overlapping techniques described therein avoid this bump or other discontinuity. Thus, one of ordinary skill in the art would not have been motivated to combine the teachings in Schlueter '193 and/or Yu of overlapping techniques with the teaching in Schlueter '974 of applying a coating over a seamed belt in order to achieve the method of claim 21. In contrast, any combination of

Schlueter '974 with Schlueter '193 and/or Yu would result in a method in which the ends of the support sheet were not overlapped in forming the seamed belt.

In summary, Schlueter '974 cannot properly be combined with Schlueter '193 and/or Yu in order to teach a method in which at least one coating is applied to a seamed belt formed by overlapping portions of a support sheet. In addition, none of Schlueter '193, Yu or Schlueter '974, individually or as combined, teach or suggest placing templates over the support sheet or that templates can be used to form first and second features in a support sheet that can be overlapped to form a seamed belt. Thus, Schlueter '974 does not overcome the deficiencies of Schlueter '193 and Yu.

4. Schlueter '301 Does Not Overcome the Deficiencies of Schlueter '193, Yu and Schlueter '974

As with Schlueter '974, Schlueter '301 is directed to forming a belt by joining two ends of a flexible substrate, each end of the substrate having a plurality of mutually mating elements in a puzzle-cut pattern that interlock but are spaced apart. Col. 1, lines 39-44. Schlueter '301 teaches that the puzzle-cut pattern may be formed according to any conventional shaping technique, such as by die cutting or laser cutting with commercially available lasers. Col. 3, lines 39-42. In the Examples section, Schlueter '301 indicates that the forming/cutting can be done using a template. Col. 11, line 49. However, Schlueter '301 does not teach or suggest how the template is used. In particular, Schlueter '301 does not teach or suggest placing templates over a support sheet, as recited in claim 21. In addition, Schlueter '301 does not teach or suggest using a template to form features that can be overlapped by the method of claim 21. In contrast, Schlueter '301 uses a template to form puzzle-cuts, which extend through the surface of the support sheet, and are therefore not overlapping features. See Figures 2-5. Furthermore, Schlueter '301 does not teach or suggest

applying at least one coating over the seamed belt. Therefore, Schlueter '301 does not overcome the deficiencies of Schlueter '193, Yu and Schlueter '974.

5. Summary

As properly combined, Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 do not teach or suggest the method of claim 21. In particular, the combined teachings of these references do not teach or suggest: (1) placing complementary templates over a support sheet to form first and second features in a support sheet that can be overlapped to form a seamed belt; and/or (2) applying a coating over a seamed belt formed by overlapping the ends of a support sheet. Therefore, the rejection of claim 21 under 35 U.S.C. §103 over Schlueter '193 in view of Yu, Schlueter '974 and Schlueter '301 should be withdrawn.

VIII. CONCLUSION

For all of the reasons discussed above, it is respectfully submitted that the rejections are in error and that claims 1-23 are in condition for allowance. For all of the above reasons, Appellants respectfully request this Honorable Board to reverse the rejections of claims 1-23.

Respectfully submitted,

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CLAIMS APPENDIX

CLAIMS INVOLVED IN THE APPEAL:

1. A seamless flexible electrostatographic imaging member belt fabrication method comprising:

providing a flexible substrate support sheet;

placing a first pattern template on a first portion of the support sheet;

producing first desired features on the first portion of the substrate support sheet, including removing material from the substrate support sheet with first emissions, the first pattern template preventing the first emissions from striking the support sheet and thus preventing removal of material from under the first pattern template;

placing a second pattern template on a second portion of the support sheet, the second pattern template being complementary to the first pattern template;

producing second desired features on the second portion of the substrate support sheet complementary to the first desired features, including removing material from the substrate support sheet with second emissions, the second pattern template preventing the second emissions from striking the support sheet and thus preventing removal of material from under the second pattern template;

overlapping the first and second desired features;

bonding the first desired pattern with the second desired pattern to produce a seamed belt having substantially no added seam thickness; and

applying at least one coating over the seamed belt.

2. The method of claim 1 wherein removing material from the substrate support sheet with emissions includes inducing a desired shape in at least one of the first and second emissions by passing the at least one of the first and second emissions through at least one mask.

3. The method of claim 1 wherein at least one of the first and second emissions comprises electromagnetic radiation.

4. The method of claim 1 wherein at least one of the first and second emissions comprises a particle beam.

5. The method of claim 1 wherein removing material from the substrate support sheet with at least one of the first emissions and second emissions further comprises inducing relative motion between the at least one of the first emissions and second emissions and the substrate support sheet.

6. The method of claim 1 further comprising coating the seamed belt with a photoconductive material.

7. The method of claim 1 wherein bonding comprises ultrasonically welding.

8. The method of claim 1 wherein bonding comprises applying and curing an adhesive.

9. The method of claim 1 wherein the first and second templates are shaped to form a puzzle-cut pattern on the substrate support sheet.

10. A seamless flexible electrostatographic imaging member belt fabrication method comprising:

providing a flexible substrate support sheet;

placing a first pattern template on a first portion of the support sheet;

illuminating a first part of the substrate support sheet with a laser beam to produce first desired features on the substrate support sheet, including removing material from the substrate support sheet with first emissions, the first pattern template preventing the first emissions from striking the support sheet and thus preventing removal of material from under the first pattern template;

placing a second pattern template on a second portion of the substrate sheet, the second pattern template being complementary to the first pattern template;

illuminating a second part of the substrate support sheet with a laser beam to produce second desired features on the substrate support sheet, including removing material from the substrate support sheet with second emissions, the second pattern template preventing the second emissions from striking the support sheet and thus preventing removal of material from under the second pattern template;

overlapping the first and second desired features;

bonding the first desired pattern with the second desired pattern to produce a seamed belt having substantially no added seam thickness; and

applying at least one coating over the seamed belt.

11. The method according to claim 10 wherein the illuminating a first part of the flexible substrate support sheet with a laser beam to produce first desired features on the substrate support sheet includes:

generating a laser beam;

spreading the laser beam;

illuminating at least one patterned mask such that parts of the spread laser beam pass through the mask as machining light; and

directing the machining light onto the first portion of the substrate support sheet and the first pattern template.

12. The method according to claim 10 wherein the first pattern template and the second pattern template induce complementary puzzle cut patterns in the respective first and second portions, and wherein the overlapping and bonding includes mating the puzzle-cut seams and subjecting the overlapped portions to ultrasonic welding.

13. The method of claim 10 wherein bonding includes applying and curing an adhesive.

14. The method according to claim 12 wherein the first and second patterns form a rabbeted joint.

15. The method according to claim 13 wherein the first and second patterns form a rabbeted joint.

16. A seamless flexible electrostatographic imaging member belt fabrication method comprising:

providing a flexible substrate support sheet;

placing first and second complementary pattern templates over first and second portions of the substrate support sheet;

bombarding the first portion of the substrate support sheet with first emissions to produce first desired features in a first pattern;

bombarding the second portion of the substrate support sheet with second emissions to produce second desired features in a second pattern complementary to the first pattern;

overlapping and mating the first and second desired features;

bonding the first desired features with the second desired features to produce a seamed belt; and

applying at least one coating to the belt.

17. The method of claim 16 wherein bombarding a second portion includes bombarding an opposite surface of an opposite end of the substrate support sheet.

18. The method of claim 16 wherein applying at least one coating includes applying a photoconductive coating.

19. The method of claim 16 wherein providing a substrate support sheet comprises providing a single layer of substantially homogeneous material.

20. The method of claim 18 wherein providing a flexible substrate sheet further comprises providing a sheet of PET.

21. A seamless flexible electrostatographic imaging member belt fabrication method comprising:

providing a flexible substrate support sheet;

placing first and second pattern templates on respective first and second portions of the substrate support sheet;

producing first desired features on the first portion of the substrate support sheet, including removing material from the substrate support sheet with first emissions;

producing second desired features on the second portion of the substrate support sheet complementary to the first desired features, including removing material from the substrate support sheet with second emissions;

removing material from the substrate support sheet with first and second emissions including inducing a desired shape in at least one of the first and second portions by passing the at least one of the first and second emissions through at least one mask;

removing material from the substrate with first emissions further including inducing relative motion between the laser beam and the substrate support sheet;

overlapping the first and second desired features;

bonding the first desired features with the second desired features to produce a seamed belt; and

applying at least one coating over the substrate support sheet, the at least one coating including a photoconductive coating.

22. The method of claim 20 wherein bonding comprises ultrasonically welding.

23. The method of claim 20 wherein bonding comprises applying and curing an adhesive.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE